

Arve R. Sjovold

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Retired, December 31, 1996

EDUCATION

University of California, Berkeley, 1956

PROFESSIONAL EXPERIENCE: NON-PROFIT

1997-2010: Part of plaintiff team challenging EIR on the SWP Monterey Amendments. As part of settlement agreement with Defendant DWR et al helped in preparation of court mandated new EIR. Performed studies on SWP operations and SWP's CALSTM II model. Suggested changes to EIR.

1975-2014: Member of Santa Barbara Citizens Planning Association's Board of Directors. Chaired or co-chaired CPA water committee which led to joining the plaintiff team challenging SWPEIR.

1996-2000: Member of Santa Barbara Community Environmental Council's Board of Directors.

2002-2010: Member of Water for California's Board of Directors, a non-profit formed of plaintiff representatives to pursue statewide water policy research within the Monterey Amendments settlement agreement.

1967-1970: Member of Santa Barbara City's Water Commission, an appointive body charged to study water department policies and proposed projects and make recommendations to the governing City Council.

1975-1985: Member of the Santa Barbara County Water Advisory Committee, an appointive position charged with developing and recommending pricing and allocation policies if the County should voter to import state water. Presided as chairman for the latter half of my tenure.

1997-2002: Vice President of Scenic Shoreline Preservation Conference, a non-profit dedicated to protection of the environment.

2016- : Advisor to California Water Impact Network (C-WIN).

PROFESSIONAL EXPERIENCE: EMPLOYMENT

- 1975-1996: **Tecolote Research Inc.**, Santa Barbara, California
 Member of the Technical Staff and Chief Cost Scientist. Responsibilities included directing the research efforts of approximately 25 staff members at the Santa Barbara division as well as many staff members in various Tecolote offices throughout the United States. As Chief Scientist, I provided consultation and technical oversight to the development of scientifically correct mathematical models used in costs analyses. Also led and participate in many cost estimates for many program offices throughout the US military establishment. Performed air quality analyses for EIR's associated with offshore oil development projects in the Santa Barbara Channel.
- 1965-1975: **General Research Corporation**, Santa Barbara, California
 Member of the technical staff and served one term as Assistant Director of Technical Review, with the responsibility to review all technical reports before they can be released. GRC specialized in the development and application of mathematical models using the disciplines of operations research and systems analysis, mostly in an advisory capacity to the US strategic forces. While at GRC, I participated in the analyses of non-military systems, such as the impacts of introduction of new technologies in regional transportation systems (for the Department of Housing and Urban Development), the environmental impacts of the introduction of electric cars on a large scale (for EPA), and the potential for computer modeling applied to investigations of organized crime.
- 1963-1965: **American Machine and Foundry Company, FOED**
 Santa Barbara, California
 Senior Systems Engineer. Performed preliminary design and analysis of mechanical and hydraulic systems.
- 1956-1963: **Rocketdyne**
 Division of North American Aviation Inc., Propulsion Field Laboratory
 Santa Susana, California
 Research Engineer. Participated in the development programs for this nation's largest, liquid rocket engines for Atlas ICBM, Jupiter and Thor IRBMs, and the Saturn and Apollo moon efforts. Primary responsibility was in the field of flow measurements of propellant flows in engine test operations.

ADVISORY & CONSULTANT ACTIVITIES

- 1975: **Anacapa Sciences, Inc.**, Santa Barbara, California
Feasibility of computerized methods in criminal intelligences analysis.
- 1972: **Army Advanced Ballistic Missile Defense Agency**
SLBM defense alternative studies.
- 1970-1972: **Army Advanced Ballistic Missile Defense Agency**
CONUS defense alternatives studies.
- 1969: **Army Advanced Ballistic Missile Defense Agency**
Indian Summer Study, comparative evaluation panel, evaluations of alternative advanced missile defense system concepts.
- 1969: **Army Advanced Ballistic Missile Defense Agency**
Minuteman Defense Study I. Systems synthesis panel. Definition of alternative hard site defense system concepts.

PUBLICATIONS (TECOLOTE RESEARCH, INC.)

Description of AEGIS Cost and Schedule Model (ACASM), (with B.C. Frederic), TM-30, December 1975

Spares Replenishment Costs for Shipborne Electronic Equipment's, TM-46, August 1976.

Cost Estimating Relationships (CERs) and Cost Data for Estimating Ship Intermediate Range Combat Systems (SICS) Life Cycle Cost, (with others), TM-66, January 1977.

Preliminary Estimates of Phalanx O & S Costs, (with L.D.Odell), TM-79, July 1977.

Navy Ship Acquisition on Strategies: The Resolution of Risk, (with others), TM-82, September 1977.

Preliminary Life Cycle Cost (LCC) Estimates for Multiple Stores Ejection Rack (MSER), TM-89, February 1978.

AEGIS Cost Handbook, TM-92, March 1978

Description of Cost Model "SHIPCST" and Its Application to the AEGIS Ship Program, TM-92A, June 1978.

Life-Cycle Cost (LCC) Estimates for Multiple Stores Ejection Rack (MSER) (Special Design Review), TM-98, June 1978.

Preliminary Life Cycle Cost (LCC) Estimates for Multiple Stores Ejection Rack (MSER), Critical Design Review, (with N.J. Brenner), TM-106, April 1979.

Preliminary Analysis of MSER Initial Spare Requirements, TM-107, April 1979.

Revised Estimates of Phalanx O & S Costs, (with L.D.Odell), TM-111, June 1979.

Potential Air Quality Impacts Due to Combined Oil and Gas Development Near Las Flores Canyon - A Preliminary Assessment, (with R.A.Nordsieck), TM-130, June 1980.

Analysis of Air Quality Impacts of Proposed Platform Habitat, (with others) TM-136, 16 January 1981.

UYK-44 Life Cycle Cost Model, (with J.A.Horak), TM-150, April 1981.

Radar Energy Study Interim Report, (with others), TM-153, May 1981.

Mini-Program Cost Assessment: UYQ-21 Conversions, (with B.C. Frederic), TM-157, June 1981.

Tactical Radar Energy Estimating Model, Volume I-Model Development, Volume II, User's Guide and Program Documentation, (with others), TM-165, December 1981.

Independent Cost Estimate, AEGISASW Upgrade, TM-169, January 1982. Delta SCN Costs for A Block 84 Upgrade of CG-47, (with others), TM-173, 14 May 1982.

Independent Cost Estimate of AEGIS-Tomahawk Integration, TM-174, II June 1982.

Final Independent Cost Estimate SEEKSCORE Bomb Scoring System, AN/TPQ-43, (with others), TM-181, 17 September 1982.

Cost & Schedule Inputs to CSR Acquisition Strategy for CV/CVN Class Upgrade, (with others), TM-183, December 1982.

Comfy Challenge Independent Cost Estimate, (with others), TM-189, February 1983.

Preliminary Life-Cycle Cost Estimates for Multiple Stores Ejection Rack (MSER) Max-Mod Configuration, (with W.B. Modesitt), TM-193, March 1983.

Program ICE-Revised Technical Baseline & Complete Program Cost Estimate, (with others), TM-196, May 1983.

AA.SM Cost Estimate, (with T.J. Dwyer), TM-199, 26 May 1983.

TPQ-37 Modified Radar System Capabilities & Analogue Cost Estimates, (with others), TM-205, June 1983.

Joint Stars Independent Cost Estimate (ICE) Draft Final Estimate (U), (with others), TM-208, July 1983 (SECRET).

Air Quality Impact Analysis for Oil and Gas Development on State Tide and Submerged Land, Point Conception to Point Arguello, Santa Barbara County, (with D.A. Nordsieck), TM-209, April 1982.

Growth Option Radar Independent Cost Estimate (ICE), Final Tech. Baseline and Procurement Cost Estimate, (with others), TM-212, September 1983.

Development of AEGIS Software Maintenance Budget (OM&N), TM-125. October 1983.

Peacekeeper Launch Control System Coast and Schedules Estimates, (with others), CR-002, March 1984.

Expanded Expanded (2)E XPlanning Yard Estimate (OMN), (with others), CR-004, April 1984.

An Approach to Evaluating the Cost and Schedule Impacts of Delaying Equipment Installation in New Ships, (with others), CR-006, April 1984.

STS Electronics Security System Final Technical Baseline, (with others), CR-003, April 1984.

Space Transportation System Electronic Security System, (with others), TM-236, May 1984.

MACUHF Satellite Terminal (MUST) System Independent Cost Estimate, (with others), CR-0019, August 1984.

Expanded Expanded (2)E XPlanning Yard Cost and Schedule Analysis, (with others), CR-0020, August 1984.

(EX2) Preliminary Design and Cost Estimate, (with others), CR-0044, February 1985.

Sagittar Phase Independent Cost Estimate, (with others), CR-0063, April 1985.

Strategic Defense Initiative Components Cost Analysis, (with others), CR-0068, June 1985.

Modeling of Fugitive Hydrocarbon Emissions, (with E.B. Dumas), CR-0075/2, December 1985.

The Potential for Fugitive Emissions Reductions Due to Improved Inspection and Maintenance, (with E.B. Dumas), CR-0080/1, January 1986.

MK-48 ADCAP Torpedo O & S Cost Model, Final Report, (with others), CR-0099, October 1985.

ESD/ACC Software Data Base Expansion Data Collection Plan, (with others), CR-0114, February 1986.

A Review of NUSC Cost Analysis Requirements, CR-0119, May 1986.

WBS for the Operations and Support (O & S) Phase of the Strategic Defense Initiative System, (with J.H. Suttle), CR-0125, May 1986.

SICBM Weapon Control System and G & C Software Estimates, Preliminary, Report, (with others), CR-0135, July 1986.

Procedures for Future Data Collection and Update, (with N.J. Brenner), CR-0136, July 1986.

Small ICBM Independent Cost Analysis, (with others), CR-0143, August 1986.

Final Independent Cost Estimating Study, (with others), CR-0144, September 1986.

MILSTAR Low Volume Force Element & Small Portable Terminals (LVFET) & (SPOT) Final Cost Estimate, (with others), CR-0210, June 1987.

A Physical Security Requirements Assessment Methodology Definition, Feasibility Assessment, and Development Plan (with others), MRC-R-651, September 1981.

Analysis of Requirements and Definition of a Method of Assessing AA&E Magazine Door Concepts, (with others), MRC-R-738 (in preparation).

PUBLICATIONS (OTHER)

Synthesis of a High Altitude Soviet Interceptor (U), TM-260, August 1965 (SECRET).

The Spacing of Objects for In-Line Attack Using a Post-Boost Control System (U), TM-416, July 1966. (SECRET-RESTRICTED DATA).

Clutter Weight Requirement as Determined by Radar Doppler Capability (U), TM-372, August 1966 (SECRET).

The ABRES Program: A Study for the US Air Force (U), (with William Hamilton) TM-487, September 1966 (SECRET- RESTRICTED DATA)

Representation of Existing Transportation for Network Flow Calculations, IMR-620/I, January 1968.

Peak and Off-Peak Network Flows, IMR-765, January 1968.

Preliminary Evaluation of a Network Flow Model for 1960 Houston, (with M. Frost), IMR-752, January 1968.

Revised Estimates of Soviet Anti-Ballistic Missile Performance Reported in IMR-100/I (U), (with others), IMR-238, March 1968 (SECRET).

SRV Studies(U), (with others), CR-16434-1, March 1969 (SECRET-RESTRICTED DATA).

Russian Forward-Based Defense (U), IMR-1116, July 1969 (SECRET/NO FORN).

Investigation of the Sensitivity of Transportation Systems Performance to Changes in Land Use, High Speed Ground Transportation Journal, Volume IV, NO. 2, May 1970.

Evaluation of Extended Rail Rapid Transit System in Boston, High Speed Ground Transportation Journal, Volume IV, No. 2, May 1970.

An ALOR Respond set to the Optically Penaided Threat (U), IMR-1434, January 1971 (SECRETRESTRICTED DATA).

US Fertility Trends and Population Projections, IMR-1567, November 1971.

Analysis of HIT Performance in a Nuclear Environment (U), RM-1612, 1972 (SECRET).
Midcourse Nuclear Effects Analysis - Methodology and Results (U), (with others), RM-1540, February 1972 (SECRET- RESTRICTED DATA).

Preliminary Synthesis of a Hybrid Defense System (U), RM-1604, 1972, (SECRET).

Proposed Methods for Allocation for Costs of Water Imported to Santa Barbara County: A Case Study, IMR-1502 (in preparation).

Hard Nuclear Radiation Effects on Optical Homing Systems (HIT Interceptor Applications) (U), RM-1859, November 1973.

Electric Energy Projections for the Los Angeles Region, 1980-2000, RM-1859, November 1973.

HIT System Studies (U), (with others), RM-1609, 1973 (SECRET).

Parametric Energy, Resource, and Noise Impacts of Electric Cars in Los Angeles, RM-1906, August 1974.

Candidate, Draft, and Final Environmental Statements for Proposed Continental Operations Range, USAF, February 1974 and June 1974, final as yet unpublished.

Population Projections for the Philadelphia and St. Louis Metropolitan Regions, RM-1939, November 1974.

Electric Energy Projections for the St. Louis and Philadelphia Regions, 1980-2000, IM-1964, February 1975.

Energy Impacts of Electric Cars in St. Louis and Philadelphia, IM-1968, May 1975.

Review of the EIS for the 101 Cross-town Freeway, May 1975.

Resources and Environmental Impacts of Electric Cars in St. Louis and Philadelphia, IM-1969, June 1975.